independently." This scheme. which forces manufacturers to assess the accessibility of inputs to a particular functional limitation independently or in isolation from the accessibility of the product's outputs to the same functional limitation could lead to results that do not. in actuality. increase accessibility.

Consider for example, Motorola's *Pagewriter™2000.*[20] The *Pagewriter™2000* is a two-way paging product that permits the user to send and receive pages. email, and access the internet in text format. Because of these features. the *Pagewriter™2000* should be extremely useful to people who are deaf or hard of hearing: the *Pagewriter™2000* can perform many functions that would otherwise need to take place over a telephone. The *Pagewriter™2000* looks like a pager-sized computer? it has a screen and a keypad. Assume, for the sake of argument, that it is "readily achievable" to include a zoom feature that would increase the size of the text on the product screen so that the product "output" would be readable by a person who is visually impaired. At the same time. it is not "readily achievable" to make the keypad accessible to persons with low vision. because the buttons would need to be so much larger that it would triple the size and fundamentally alter the product Under the FCC's proposal, which endorses the Access Board's independent assessment of whether it is ready achievable to make product inputs and product outputs accessible to the same functional limitation -- Motorola would be required to incorporate the zoom feature even though a person who is blind or has low vision could not use the product because of its inaccessible inputs.

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[19] Access Board Guidelines § 1193.41, § 1193.43

[20] A product information sheet for the *Pagewriter™2000* has been attached as Appendix B to these comments.

[21] Its dimensions are: 3.6" x 2.8" x 1.2"

As the *Pagewriter™2000* example demonstrates. the FCC's proposed regime would lead to nonproductive results. People with disabilities would not benefit if a manufacturer were to incorporate some access features into a product. but could not incorporate others that would make the product actually usable. useful. and desirable to people with the disability at issue. In fact, such actions would lead to consumer frustration and encourage the misperception that the manufacturer does not understand functional limitations or how people with those functional limitations interact with CPE. By adding useless features., it would make the product less attractive and more expensive without any added benetit. It would be a waste of resources and a poor result for consumers with disabilities to require a manufacturer to incorporate the "readily achievable" access feature in this example.

3. Only a product-line approach to Section 255 implementation will be workable and result in meaningful increases in the accessibility of CPE to persons with disabilities.

Someone may respond to this discussion by arguing that Motorola has simply identified several examples where it was not "readily achievable" to modify the individual product to provide the desired access to telecommunications. That is exactly the point. Because it is impossible, and therefore not "readily achievable" to make the particular product accessible to everyone, manufacturers' inability to make "accessible" product, as the FCC proposes to define that term, will be the rule. not the exception As a result. it is: (1) inconsistent with Section 255's goal of increased accessibility; (2) unfair to manufacturers; (3) a waste of limited compliance resources; and (4) counterproductive to subject manufacturers to complaints about the accessibility of every product to every functional limitation.

Because of the legal and practical limitations on what manufacturers are required to do to enhance accessibility. only a product-line approach to compliance makes sense to achieve the goal of increased access to products and service for persons with disabilities. A product-line approach to compliance makes sense both in terms of enhancing the accessibility of products available to persons with disabilities, and in terms of making products that all people. disabled and non-disabled, want. The best way to meet access needs and to make desirable products is to permit product differentiation through the inclusion of access features across product lines. Why should everyone's choice of pagers be limited to a *Portable Answering Machine* with an alphanumeric display? Why shouldn't a person who is deaf or hard of hearing be able to buy the smallest alpha-numeric pager on the market, which is fully accessible to him or her and meets his or her telecommunications needs"

As these examples demonstrate, the FCC's "ideal" of "full accessibility" in a single product is not ideal at all. The trend in CPE manufacturing is to make products that arc increasingly personal and customized to meet the needs of specific classes of users. To the extent "readily achievable." these classes of users include persons with disabilities.

A product-line approach to compliance which recognizes and endorses the need for manufacturers to exercise discretion to increase accessibility across a product line, permits greater tlexibility for a manufacturer to work within the limits of what is "readily achievable." A product-line approach would permit a manufacturer to include more accessibility features to accommodate a particular type of disability into selected products. For example, a manufacturer seeking to provide access to persons with partial hearing loss could include enhanced audio. a speaker jack, and a vibrating feature in certain cellular phone models. rather than provide only enhanced audio in every phone. Such an approach would be preferable to consumers – both

consumers with disabilities and non-disabled consumers. who need similar features, for example. because they work in a noisy environment. In this way an "up front" product-line approach to compliance could result in the provision of more meaningful levels of access for particular functional limitations in a targeted group of products. rather than a very superficial level of access in virtually all products.

C. By Making The Product Line Approach The Rule, The FCC Avoids Requiring Manufacturers to Waste Time And Money Proving Why Each Individual Product Is Not "Universally Accessible" - An Impossible Goal.

In spite of the unanimous recognition **that** no one product can be accessible to everyone, under the FCC's proposal. manufacturers would apparently be vulnerable to complaints about the accessibility for every product to every person with every disability. While recognizing that manufacturers cannot produce universally accessible products. the FCC's proposal would permit a series of piecemeal complaints based on different functional limitations and needs that would effectively require manufacturer< to defend their inability to achieve the impossible – a universally accessible product -- not only once. but over and over again.

Under this regime. manufacturers who attempt to comply with Section 255 in good faith are constantly on the defensive. A manufacturer receives no safe harbor from complaints for doing what needs to be done to increase access – exercise discretion to include features that enhance access into different products **where** "readily achievable." The FCC's regulations do not recognize **what** the FCC concedes: that it is not feasible to make every product accessible to every disabled individual. On the other hand. it-manufacturers and service providers were permitted to evaluate the accessibility features of **an** entire product line. the result

would be product lines which include a variety of products that are accessible or compatible with various functional limitations.

By making manufacturers vulnerable to complaints about the alleged inaccessibility of every product to every functional limitation, the FCC's proposal maximizes the number of complaints that can potentially be tiled. Since a manufacturer will need to defend its product design decisions concerning what is "readily achievable" for all functional limitations for every product, the FCC's proposal similarly maximizes the amount of documentation that a conscientious manufacturer will. as a practical matter. be required to generate and to keep to defend itself.[22] Consequently. the FCC's proposed approach. which requires manufacturers to assess whether each of the eighteen "accessibility" criteria are "readily achievable" for each product is excessively burdensome. This FCC's proposed regime will ultimately undermine the goals of Section 255 by diverting limited resources from design and development of a variety of products that provide meaningful access for a variety. of functional limitations and towards compliance documentation and defense.

[22] Without question. the five day "fast-track" complaint procedure proposed by the FCC. NPRM ¶¶ 126-143 will dictate that a manufacturer create and maintain files of purely prophylactic documentation in order to respond to any complaints forwarded by the FCC in a timely manner. The "fast-track" process destroys the validity of the FCC's tentative conclusion that the proposed rules impose no information collection requirements other than designation of a point of contact. See Initial Regulatory Flexibility Act Analysis, NPRM Appendix E, at E22. As Motorola pointed out in its comments on the Access Board's NPRM, each of the eighteen "accessibility" criteria on the checklist will surface at each decision-making crossroads in the product design, development and fabrication processes. A prudent manufacturer will want to document the reasons why any action that had an impact on accessibility was taken to show that the manufacturer has done what was "readily achievable" to promote access. The FCC's tentative refusal to recognize these significant documentation costs, implicitly required by the NPRM. permits the FCC to avoid asking the question whether such documentation costs should be considered in determining what is "readily achievable." and to ignore the practical reality that the diversion of limited resources to documentation and defense will inevitably reduce the resources available to provide access.

In contrast. the product-line approach to compliance. advocated by Motorola and other manufacturers, recognizes the practical reality that no product can be accessible to all functional limitations, and reduces the amount of documentation and complaints that will be generated by Section 255 so that more resources can he directed towards the design for accessibility – the intent and spirit of Section 255. By focusing on manufacturer's accessible outputs rather than detailed regulation of manufacturing processes, the product-line approach will increase the incentives and abilities of manufacturers to produce meaningful access for a wide range of disabilities.

D. The ADA Not Only Supports, But Compels, The FCC To Adopt The Product-Line Approach Which Will Increase the Number of Accessible Products in the Marketplace.

As Motorola has pointed out throughout these proceedings, the ADA – which is referred to in both the text and the legislative history of' Section 255 - provides strong support for the FCC to interpret **Section** 255 "up front" to require each manufacturer to provide comparably priced products that are accessible for each product line offered – in other words, that provide representative access to each type of service. Under this regime. compliance would be assessed based upon the accessibility of product lines or families. The number of accessible products. and in particular, the quality or degree of accessibility would increase by implementing this approach.

The FCC has the authority to interpret Section 255 to require accessibility across product lines. The telecommunications and customer premises "equipment" referred to in the text of Section 255(b) can be interpreted as either singular or plural. To resolve this textual ambiguity, the FCC should look to the ADA; it strongly supports defining the scope of Section

255 to apply to families or groups of products. Both the courts and the government agencies responsible for implementing the ADA have recognized that proper application of the "readily achievable" definition, will. in some circumstances. result in disabled consumers having comparable access but fewer choices than the general public.

As Motorola has repeatedly pointed out. the ADA regulations related to fixed seating in public theaters and stadiums and hotel rooms demonstrate that government agencies, as well as the courts. have recognized the reality that providing access can carry substantial costs and require significant physical modifications, so that the "readily achievable" definition does not require that every seat or room be accessible." Consequently, disabled patrons have fewer choices than the general public. Whereas the general public can choose from any seat in the stadium or theater, disabled patrons' choices are limited to a representative sample of seats that are accessible. While a person with a disability may have fewer choices of seating locations available in a particular theater or stadium, he/she still has the choice of going to a variety of theaters or stadiums with accessible seating. So too a person with a disability, under the product-

[23] Under the guidelines promulgated by the Access Board, and adopted by the Department of Justice ("DOJ"), theater and stadium owners are not required to make every single seat wheelchair accessible. Department of Justice Standards for Accessible Design ("JDSAD"). 28 C.F.R., Part 36, App. A, § 4.33.3; 28 C.F.R. § 36.308, DOJ Preamble to Regulation on Non-Discrimination on the Basis of Disability ("DOJ Preamble"), 28 C.F.R. Part 36, App. B (commenting on § 36.308). Even as applied to new construction, which is subject to more stringent requirements than existing facilities, the ADA has been interpreted to require that: (1) a certain percentage of accessible seats be provided; (2) the accessible seats must be integrated into the seats available to the general public; and (3) the accessible seating must be dispersed throughout the stadium or arena so that disabled patrons are offered the same general range of choices, including sight lines and price, that are available to the general public. Id.; Paralyzed Veterans of America v. Ellerbe Beckett Architects & Engineers, P.C., 950 F. Supp. 393, 398-405 (D. D.C. 1996) (discussing these requirements and applying them to the MCI arena in the District of Columbia), affd, 117 F.3d 579 (D.C. Cir. 1997), cert. denied, 118 S. Ct. 1184 (1998).

line approach, would have a representative sampling of products with accessible features from one manufacturer. as well as an even broader range of choices of products with different and similar access features in the marketplace as a whole.

The Access Board rejected manufacturers' position that the ADA supports a product-line approach to compliance, stating:

> In drawing analogies from the ADA, the correct connection is between the telecommunications equipment and CPE and the facility, not individual elements within the facility. For example. all theaters in a multi-theater complex must be accessible so that persons with disabilities can choose which films to see, not only a few theaters with "comparable" movies Disabled persons' seat choices are limited but not whether they can see movie A or movie B.[24]

The Access Board's reasoning. rather than disproving the product-line approach, actually supports it. Accessible CPE is not an end in itself. Rather, CPE is simply a vehicle for persons with disabilities to access a variety of telecommunications services such as wireless telephony and paging. To use the Access Board's analogy. the CPE is not the movie – the telecommunications service is. The range of CPE available in the marketplace is like the seats in the theater: each is slightly different but serves the same essential function -- in the Section 255 context – accessing telecommunications service.

Therefore, contrary to the Access Board's conclusion. the ADA compels an interpretation of Section 255 that would require manufacturers to provide a representative sample of accessible products. to the extent "readily achievable," that would provide disabled consumers with the same range of basic choices as non-disabled consumers, such as telecommunications

[24] 63 Fed. Reg. at 5612.

functions, quality and cost. Furthermore. this reading of Section 255 will dramatically increase the number of accessible products available in the marketplace.

III. MOTOROLA AGREES THAT THE FCC SHOULD ADAPT THE DEFINITION OF "READILY ACHIEVABLE" TO THE TELECOMMUNICATIONS CONTEXT, SPECIFICALLY BY FOCUSING ON THE CONCEPTS OF TECHNICAL FEASIBILITY, CUMULATIVE COST OF ACCESS FEATURES, AND FUNDAMENTAL ALTERATTON.

A. The FCC Should Adapt The Definition Of "Readily Achievable" To The Telecommunications Context.

Motorola supports the FCC's tentative decision to modify and adapt the ADA definition of "readily achievable." to the unique context of telecommunications.[25] Under the FCC's proposed approach. "the ADA factors should guide. but not constrain . . . development of factors that more meaningfully reflect pertinent issues related to telecommunications equipment and services."[26]

1. In order to appreciate the complexity of determining what is "readily achievable," and to formulate appropriate regulations, the FCC should give greater consideration to the many inter-related factors that drive product design and development.

In order to adapt the "readily achievahlc" standard appropriately to the telecommunications context. Motorola believes that the FCC needs a greater understanding and appreciation for the complexity of the product design and development process. The design and development of telecommunications equipment and CPE is an extraordinarily complex process that involves consideration of inter-related factors and difficult trade-offs, all in the context of a

[25] NPRM ¶¶ 98, 99

[26] NPRM ¶ 98.

highly competitive marketplace. Rather than discuss this process in the abstract, Motorola provides some specific information about the product design process in the hope that the FCC will develop regulations that promote the goals of Section 25.5 by taking into account the complexities of the product design process.

While the process of developing new products varies from manufacturer to manufacturer, the process is typically driven by management and marketing, using such tools as market research, strategic planning tools, and considerations related to the company vision or overall strategy. Normally, a product is developed with a specific customer niche as a target; i.e., the product is designed to meet the needs of a specific part of the market demographics. Each market segment is defined by the need for specific core features (function, size, and appearance); the teenage paging market, for instance. calls for a much different look and features than does the market for executives. These core features. in combination with company strategies, define the fundamental characteristics **ot'thc** product being developed.

In many companies, the product development process is controlled by a product definition document called a "contract book." This document defines the product in terms of overriding goals and sets targets to achieve those goals such as cost. size, and reliability. In addition. the product definition document sets a series of product operational and technical parameters such as features, frequency range. product registration time,[27] and audio quality. A product design team's job is to translate the product definition document into an actual product.

[27] Product registration time is the interval between the moment that the product is activated by the user and the time that it is actually capable of performing its various functions. For example, the first time a user turns on a cellular phone or two-way pager, the device initiates a "handshake" or registration with the system switch. This can take several minutes and until completed, the system will not recognize the user's unit.

To accomplish this, the product design team translates the product goals into "product drivers" and sets budgets for accomplishing them.

A hypothetical set of "product drivers" and budgets for CPE product. might include the following:

- ▯▫♦
- battery life
- registration time
- part count[28]
- size
- memory (RAM. ROM)
- feature set
- audio quality

These "product drivers," and the corresponding "budgets" established to achieve these goals, have a complex inter-relationship.

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[28] In manufacturing, part count has a highly significant impact on product reliability and quality. The fewer parts involved, the fewer errors that are likely to be generated in the manufacturing process. At Motorola part count has been the leading strategy for meeting Six Sigma quality in all our products. Adding parts also Increases the size of the product circuit board and thus. the size of the product.

In addition to the basic part count driver there are other practical issues related to manufacturing difficulties and costs. Even an accessibility feature, like a speaker jack (which is perceived as "simple" because the components may not be very expensive and the change may not interfere with use of the product by a person who does not need that feature) may involve substantial. costly changes to the product assembly line. On an assembly line, components that are similar in size and shape can typically be incorporated into a product by the same robot. A speaker jack, for example, which is a one of a kind component, typically requires a custom placement, either manually (by a human being) or by another specially programmed robot, which can add significant assembly and product costs.

Once the product drivers are identified. the progress of the design effort is measured in terms of these budgets. For instance, the target size of the product usually determines the size of the battery that can be used. and this. with the desired battery life of the product. determine the amount of power available to support the product (current drain budget). If the current drains of product features are added-up and exceed the budget, the design will have to be changed. so that the overriding current drain goal will be met. This may involve making trade-offs. and possibly going back to management to report that a desirable feature might have to be eliminated to continue the design. In some cases. if the trade-offs compromise the ability to achieve product goals. the product may be terminated

Motorola has developed a matrix to provide a flavor for the complex effect of the FCC's proposed 18 point "checklist" for defining accessibility on the product drivers that govern the development process,. In this matrix, the vertical axis lists the 18 items on the accessibility "checklist". with some possible implementation strategies under each one. The horizontal axis t ists the "overriding budgets" which are derived from the product drivers. The intersection points for each of the columns and rows represents the location of an interaction between the access strategy and the respective design budget. If there is interaction, the point is marked with an "X". The matrix demonstrates that in virtually every instance, the inclusion of a single access feature would implicate not just one, but many of the product drivers.

EXAMPLES OF ACCESS FEATURES AND IMPACT ON PRODUCT DRIVERS								
Audio Quality	Tiering	Memory (RAM, ROM)	Part Count	Registration Time	Battery Life	Size	Cost	Product Drivers
								Input, Control & Mechanical Functions
								Operable w/o Vision
x	x	x	x		x	x	x	voice chip
							x	nib on 5 key
			x			x	x	Braille key pad
								Operable w/ low vision
x	x	x	x		x	x	x	voice chip w/ enhanced audio
x		x	x		x	x	x	voice chip w/speaker jack
		x				x	x	zoom w/ enhanced audio
		x				x	x	zoom w/ speaker jack
								Operable w/ little or no color perception
								no exclusive use of color to designate key functions
							x	enhancements to contrast on visual displays
								Operable w/o hearing
		x	x		x	x	x	vibrating feature
		x						visual cues
								Operable w/ limited manual dexterity
						x	x	big buttons
x	x	x			x		x	speaker phone
	x	x	x	x	x	x	x	voice-activated features
								Operable with limited reach or strength
	x	x	x	x	x	x	x	voice-activated features
x	x	x			x		x	speaker phone
								Operable w/o time-dependent features
		x					x	ability to opt-out of time-dependent features
								Operable w/o speech
		x	x			x	x	text inputs
								Operable w/ limited cognitive skills
		x					x	expanded number storage/memory
								Output, Display & Control Functions

EXAMPLES OF ACCESS FEATURES AND IMPACT ON PRODUCT DRIVERS								
Audio Quality	Tiering	Memory (RAM, ROM)	Part Count	Registration Time	Battery Life	Size	Cos	Product Drivers
								Availability of visual information
x		x	x		x	x	x	voice chips
		x					x	incorporation of auditory cues
								Availability of visual info ... low vision users
		x	x			x	x	zoom features
								Access to moving text
		x					x	"freeze-frame" function
								Availability of Auditory Information
		x	x			x	x	text display
								Availability of auditory info... hard of hearing
x		x	x		x	x	x	enhanced audio
		x	x			x	x	text display
		x					x	visual cues
								Prevention of visually-induced seizures
		x					x	ability to deselect flashing features
								Availability of auditory cutoff
						x	x	ability to shut off volume
								Non-interference w hearing technologies
x		x	x			x	x	EME emissions do not generate interference
								Hearing Aid Coupling
x			x			x	x	all product outputs hearing aid compatible

The interaction between the access solution or feature and the budget often requires a complex design analysis and decision. The interaction may result in the following required actions:

1. If the impact of the access solution or feature on the budget is known, it must be reviewed to make sure that it does not cause an overall problem in the product meeting its target.

2. If the access solution or feature causes the budget to be exceeded, the design must be reviewed to see if other changes can be made to permit the inclusion of the feature.

3. If the access solution or feature is not technically feasible, a case must be made for why it is not, and this must be carefully documented.

4. If an access solution or feature is not known, the literature must be searched or internal technical experts must be sought to find a viable approach; this often requires lengthy investigations, including iterative design and testing.

5. If a access solution or feature is known, its effectiveness for the particular product must be tested to confirm that it works; this may require extensive testing of prototypes using actual market tests.

6. If the access solution or feature is found to be not "readily achievable" for any reason, the analysis resulting in that determination must be documented.

As can be seen in the matrix, the FCC's recommended approach requires dozens of these design exercises to take place. Typically, making a product accessible to a particular functional limitation will not be a question of "tweaking" one product feature – but many – inputs, outputs, controls, etc., further complicating this analysis. Furthermore, this matrix would be different for every product. It should be noted that rarely are the many hundreds of design decisions that take place today documented in any manner that can be retrieved. The guidelines are particularly onerous if all 18 tests are applied to every product, as is suggested in the FCC's NPRM.

Referring again to the matrix, an example of how this might work is to look at the first item on the Access Board/FCC accessible "checklist," "Operable without Vision." Here the engineers listed the use of a voice chip, a nib on the "5" key, and a Braille key pad as possible strategies for compliance. In looking at the voice chip, there are a significant number of "budget

interactions" which might be considered. Adding the voice chip adds a significant number of components and software, so it affects current drain, size, component count, cost, memory, etc. Consequently each of the budgets must be evaluated to see if it can "accept" this new requirement. In the case of the voice chip, the audio quality must be tested and verified. This requires testing with human subjects, because there are no "lab tests" for audio quality. This type of exercise would then have to be repeated, for the remaining 17 items on the accessibility checklist and for each strategy which might accomplish the checklist items. [29]

This is an oversimplified example. However, it makes the point that the design process is a complex, interactive analysis and decision making exercise. The addition of the Access Board/FCC proposal to this process is stifling and overwhelming. It adds significant time to the design process in an industry in which design cycle-times must be continuously reduced to maintain competitiveness. The FCC's approach has added nearly 100 interactions (in this example) in the evaluation of the accessibility of the product. Some of these interactions are straightforward; most of them are very complex. The FCC proposal adds exponentially to the complexity of the design process, and the added burden of documentation and management/legal review to position the company to defend itself in the light of potential complaints is non-valued

[29] The complexity of the determination of what is "readily achievable" in virtually every instance demonstrates that the FCC's position that its proposed rules do not require any documentation other than establishment of a point of contact is incorrect. See Initial Regulatory Flexibility Analysis, Appendix E to the NPRM at E22. The need for such documentation will arise not only in the **context** of a complaint process, but also internally. Many conscientious manufacturers will attempt to monitor compliance with Section 255 within their own organizations. Certainly, the FCC should want manufacturers to take such actions to ensure compliance without FCC involvement. The discussion above, however, should demonstrate the onerous system that the FCC will establish if it adheres to its proposed 18 point mandatory checklist for accessibility, which would require manufacturers to conduct the complicated "readily achievable" calculus described above for each of the 18 items on the checklist.

added activity. The proposed approach forces activities away from creative design, and puts the company energies into defensive documentation and internal legal reviews.

Moreover, the impact of access features upon each of the product drivers demonstrates the impact, in terms of "difficulty" and particularly, "expense" on product design and development. A determination of what is "readily achievable," for example, in terms of cost requires consideration of not only the cost of the access feature itself, but also includes:

- the cost of any increased requirements for power or memory capacity.
- the cost of additional quality control measures caused by increased errors due to higher part count.
- opportunity costs when features that could be subject to tiering (sold for an additional fee) are sacrificed to include access features.

Similarly, a determination of whether an access feature would "fundamentally alter" the nature of the product requires consideration, for example of any increase in size caused not only by the access feature itself, but also any increase in size caused by increased requirements for power or memory capacity.[30]

B. In the Telecommunications Context, The Determination Of What Is "Readily Achievable" Should Focus On Technical Feasibility, Cumulative Cost, And Fundamental Alterations Involved In Making A Product As A Whole Accessible To A Particular Functional Limitation.

In the NPRM, the FCC proposes a three-part framework for determining whether a particular telecommunications accessibility feature is "readily achievable:"

- Is the feature feasible?

[30] A product battery, for example, occupies between 20 and 60% of the total product size.

- What would the expense be of providing the feature?
- Given its expense, is the feature practical?[31]

In the NPRM, the FCC requested comment on these proposed factors, especially their "practical implications," and "effect on the development and marketing of accessibility features, on the pace of innovation, and on the administrative costs associated with implementation and enforcement measures."[32]

Motorola agrees with many of the concepts that underlie the FCC's proposed three-part approach, but proposes an alternative three part framework that more accurately reflects ADA precedent and would be more efficient and effective for the FCC to implement. Motorola's proposal would make the determination of what is "readily achievable" based upon three areas of inquiry:

- Technical feasibility
- ▯▯▯
- Fundamental alteration

Motorola believes that this proposed approach more accurately adapts the concept of what is "readily achievable" based upon the ADA analogy.

[31] NPRM ¶100.

[32] Id.

1. The "readily achievable" determination should focus on the actions required to make a product accessible overall to a person with a particular functional limitation.

As a threshold matter, Motorola objects to the FCC's proposed framework because it focuses on whether an individual access feature is "readily achievable," instead of whether a product can be made accessible overall to a consumer with a particular functional limitation. In the *Pagewriter™2000* hypothetical, for example, even if it were "readily achievable" to make the product output (text on the screen) accessible to a person who is blind or visually impaired, it is unproductive to expend the cost and effort to do so because the product inputs – its keypad – will never be accessible to the visually impaired because of its size. If the FCC is truly interested in increasing the availability of accessible CPE in the marketplace, it should focus on whether it is "readily achievable" to make a product accessible overall to a particular functional limitation, not on individual access features. Any other approach is inconsistent with the FCC's interest in implementing Section 255 in a way that is practical.[33]

2. Technical feasibility, cumulative cost, and fundamental alteration should guide the determination of what is "readily achievable" and therefore be required by Section 255.

a) Motorola agrees with the FCC that technical feasibility should be considered.

First, Motorola commends the FCC for modifying the Access Board's guidelines so that technical feasibility is recognized as a distinct, express factor used in determining what is

[33] NPRM ¶ 106. The FCC's formulation of "practicality," however, suggests that this consideration is based upon the cost of a given access feature. Id. ("Perhaps the most difficult aspect of determining whether a particular accessibility feature is "readily achievable" involves determining whether it is practical, given the expense involved."). As Motorola's examples demonstrate, there are likely to be many situations where an accessibility feature is not practical regardless of how much it costs.

"readily achievable."[34] Like the NPRM, Motorola's proposal includes the concept of technical feasibility, recognized by the FCC as the practical application of "achievability" in the context of telecommunications.[35]

Motorola agrees with the FCC's tentative conclusion that technical feasibility should not be reassessed after a product is introduced to market.[36] The FCC's proposed rules should make it clear that because Section 255 imposes compliance obligations on the design, development, and fabrication of equipment and CPE, technical feasibility must be assessed at the time the design, development and fabrication process for a new product or a substantial upgrade for an existing product begins. As the Access Board and the TAAC recognized, the requirement that the technical feasibility of access features be reassessed every time a product is upgraded in a manner that substantially affects its functionality will ensure that accessibility features can be incorporated into products that remain popular in the marketplace for long periods of time.[37]

Redesigning products that have already been designed to take into account the latest technological developments should not be required under any circumstances.[38] Any redesign requirement would deplete limited compliance resources, delay product time to market, and slow the pace of innovation in a rapidly changing marketplace where products quickly become obsolete. For the same reason enforcement strategies utilized by the FCC should be

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[34] See NPRM at ¶ 102 (discussing Access Board's decision not to recognize feasibility as a separate factor).

[35] NPRM ¶ 101.

[36] See NPRM ¶ 120.

[37] 36 C.F.R. § 1193.2; TAAC § 4.2.

[38] See id.

proactive rather than punitive, directed towards increasing the availability of accessible equipment and CPE in the marketplace going forward.

b) Any determination of what is "readily achievable" must take into account the cumulative impact and cost of features that enhance accessibility for the same or different disabilities.

Based upon the ADA analogy, the FCC must consider the cumulative impact and cost of access features in determining what is "readily achievable." The Department of Justice ("DOJ"), in interpreting the ADA, determined that it is "appropriate to consider the cost of other barrier removal actions as one factor in determining whether a measure is "readily achievable."[39] Nothing in the text of Section 255 supports the FCC taking a different position on the relevance of cumulative impact in interpreting the same legal standard.[40]

Contrary to this ADA precedent, the FCC's proposal refuses to account for the cumulative cost and impact of incorporating multiple access features. Under the Access Board's definitions of accessibility and compatibility, which the FCC proposes to adopt, a manufacturer must perform an independent "readily achievable" calculus for each item on the "accessibility" and "compatibility" checklists.[41] In practice, this would mean that a manufacturer's efforts to

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[39] DOJ Preamble, 28 C.F.R. Part 36, App. B (commenting on § 36.104).

[40] In fact, the text of Section 255 supports Motorola's interpretation that a manufacturer's efforts to provide access should be evaluated in terms of the efforts taken to accommodate persons with disabilities as a group. Section 255 requires manufacturers to "design, develop, and fabricate" equipment and CPE that is "accessible to and usable by persons with disabilities, if readily achievable." If Congress had intended an independent assessment of what was "readily achievable" for different functional limitations, rather than for persons with disabilities as a whole, it could have identified different functional limitations and indicated that the statutory obligation applied independently to each.

[41] See NPRM ¶ 75 (requesting comment on this proposal).

incorporate features to provide access to people who are blind, for example, would have no relevance in the determination of whether features to provide access to people who are deaf also had to be included in the same product. Such an approach is inconsistent with the manufacturing process, where tradeoffs, interrelated cost impacts and physical considerations must all be weighed together.

Declining to consider the cumulative costs and impact of access features is entirely at odds with the practical realities of manufacturing CPE products. As Motorola's matrix, at pages 28-29 above, demonstrates, products are defined in terms of product drivers and budgets. While inclusion of a single access feature might not "exceed" the cost budget (or the energy, size or parts budget), the inclusion of several access features, with their corresponding impact on other product drivers (like memory and battery life) could easily do so. If the "budget" is exceeded on any one of these product drivers, there is the risk that the product will no longer meet the needs of the target market segment that it was designed to serve, which could result in it being canceled before it is ever produced.

c) The concept of "fundamental alteration" should be modified to the telecommunications context to ensure that CPE products remain consistent with the fundamental characteristics of functionality and price required by the market they are designed to serve.

As another factor relevant to determining what is "readily achievable," the FCC should rely upon ADA precedent to recognize that Section 255 does not require "fundamental alteration" of products so that they no longer satisfy the needs (such as function and cost) of the target market that they were designed to serve. Motorola believes that fundamental alteration

should be expressly recognized because it will play a critical role in determining what is "readily achievable," particularly for wireless CPE.

In the preamble to the ADA regulations, DOJ determined that changes that result in fundamental alterations are not "readily achievable." DOJ reached this conclusion by drawing a comparison to the "undue burden" standard, which defines the scope of a public accommodation's duty to provide "auxiliary aids and services" such as sign language interpreters, text telephones, and assistive listening devices.[42] The "undue burden" and "readily achievable" determinations depend upon the same factors; however, the "undue burden" standard requires a higher level of effort to achieve compliance than the "readily achievable" definition does.[43] Since the "undue burden" standard excuses actions that would fundamentally modify goods and services, DOJ concluded that the "readily achievable" definition would excuse such actions as well, even though this is not specifically stated in the regulations.[44]

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[42] In addition to requiring public accommodations to remove architectural and communications barriers "that are structural in nature . . . where such removal is readily achievable," 42 U.S.C. §12182(b)(2)(C)(2)(A)(iv), the ADA requires public accommodations to provide auxiliary aids and services, such as sign language interpreters, unless it can "demonstrate that taking such steps would fundamentally alter the nature of the good, service, facility, privilege, advantage, or accommodation being offered or would result in an undue burden." § 12182(b)(2)(C)(2)(A)(iii).

[43] Although what is "readily achievable" and what is an "undue burden" are defined in terms of the same factors, the undue burden standard is more stringent. Whereas "readily achievable" is defined to mean without much difficulty or expense," (emphasis added), "undue burden means "significant difficulty or expense." 28 C.F.R. § 36.104 (regulations defining "readily achievable" and "undue burden"); see also 28 C.F.R. Part 36, App. B (commenting on relationship of two standards).

[44] See 28 C.F.R. Part 36, App. B (commenting on relationship of two standards).

The Access Board, in its guidelines, recognized that the concept of fundamental alteration was useful and appropriate in identifying those instances where accessibility is not "readily achievable."[45] The Access Board acknowledged that under the "readily achievable" standard, "fundamental alteration" of products to provide access is not required.[46] Although the FCC's proposal alludes to the fundamental alteration concept,[47] the FCC does not expressly recognize it. Motorola recommends that the FCC expressly recognize the fundamental alteration concept.

In Motorola's view, the concept of fundamental alteration should be applied in the telecommunications context to identify the fundamental characteristics of a product that it is not "readily achievable" to change, including core features and price desired by the target market (the "product drivers discussed above"). Motorola's proposal is grounded upon the practical reality that CPE is not designed, developed or fabricated in the abstract, but for a specific market segment that wants certain core features and is willing to pay a fairly inelastic price, driven by competitive offerings. [48] Just as doubling the size of a small wireless handset to include large buttons would fundamentally alter the nature of the product, which depends upon its

[45] Because the "readily achievable" standard is less stringent that the undue burden standard, from which the fundamental alteration concept is derived, a manufacturer should not be required to prove that a fundamental alteration would result from a proposed product modification in order to show that it was not "readily achievable" to modify the product as proposed. Even if a manufacturer cannot reach the "fundamental alteration" threshold, the FCC should consider the impact of a proposed modification to provide access on the product's marketability in determining whether the modification is "readily achievable."

[46] Appendix to 36 C.F.R. Part 1193 (comment 3 on the definition of "readily achievable," § 1193.3).

[47] See NPRM ¶¶ 104,106, 113,114.

[48] Any market segment includes individuals with disabilities.

compactness and portability for its popularity, so too, the inclusion of accessibility features that increase the price of the product so that the target market is less willing to buy it fundamentally alter the nature of that product by making it unsuitable for its target market. For the same reason, manufacturers should not be required to eliminate key product features in order to incorporate accessibility features, because the omission of those market-driven features would similarly render the product unsuitable for its target market.

Motorola's proposal would not relieve manufacturers of all obligations to include accessibility features into their products. Given the discretion to incorporate access features to accommodate different disabilities across the range of products in a product line, manufacturers will often be able to incorporate features that enhance accessibility without increasing the product price or changing its size beyond what the target market will bear. This approach will promote increased access.

IV. MOTOROLA'S PROPOSED DEFINITIONS OF KEY STATUTORY TERMS, INCLUDING "ACCESSIBLE" AND "COMPATIBLE" WILL PROMOTE INCREASED ACCESS FOR PERSONS WITH DISABILITIES.

A. Motorola Endorses TIA's Proposed Definition Of "Accessible," Which Would Maximize The Accessibility Information Made Available To Consumers And Minimize The Amount Of Resources Diverted To Documentation.

As a CPE and telecommunications equipment manufacturer, Motorola wants satisfied customers – disabled and non-disabled alike. In order to achieve the goal of customer satisfaction, Motorola seeks to provide all customers with the products that meet their specific needs.

With respect to the definition of "accessible," Motorola believes that the FCC should adopt an approach that facilitates and encourages, rather than hinders, manufacturers in